

CLAIMS

1. Method for manufacturing discrete electronic components of the inductive type, in particular inductance coils, transformers or antennae, including the following steps:

- 5 - micro-machining a first substrate of magnetic material so as to batch process a plurality of first parts (1) connected to each other by first connecting elements (2) or a first connecting support (40) and each forming a first base (24; 9) and at least an arm (26; 8b) projecting from said first base;
- forming a plate (5) with openings (6; 6a, 6b, 6c) passing right through it and
10 disposed in a corresponding way to the arms (26; 8a, 8b, 8c) of said first parts of said first substrate, at least an electrically conductive winding (12) per first part being carried by said plate around one (6; 6b) of said openings;
- placing said plate on the first substrate so that it is inserted via its openings between said arms;
- 15 - micro-machining a second substrate of magnetic material so as to batch process a plurality of second parts (30; 13) connected to each other by second connecting elements or a second connecting support and each forming at least a second base;
- placing the second micro-machined substrate on said first substrate and said
20 plate, and connecting the second parts of the second substrate to the respective first parts of the first substrate so as to batch process a plurality of cores or magnetic circuits each associated with at least one winding (12); and
- separating the plurality of components obtained by machining or cutting said
25 plate (5) so as to form a plurality of distinct plates (4; 28) respectively associated with said plurality of cores or magnetic circuits.

2. Method according to claim 1, characterised in that each winding (12) ends in two electric contact pads (7a, 7b) located outside the projection of said first and second bases on said plate, said plate being either formed directly with tongues (16, 18) at the ends of which said contact pads are located, or cut so as to form such
30 tongues, this method including a step of folding said tongues so as to bring their ends against the back of said first or second base where they are secured so as to provide components able to be used in surface mounting techniques.

3. Method according to claim 2, characterised in that at least a part of said tongues each have at their respective ends several contact pads.

35 4. Method according to claim 1 or 2, characterised in that said second parts are substantially identical to said first parts.

5. Method according to any of claims 1 to 4, characterised in that said magnetic material is ferrite.

6. Method according to any of claims 1 to 5, characterised in that said micro-machining performed on the first and second substrates is electro-erosion
5 machining using an electrode (3) with patterns in relief.

7. Method according to any of claims 1 to 5, characterised in that the micro-machining performed on the first and second substrates uses a sand blasting technique.

8. Electronic component of the inductive type, in particular an inductance
10 coil, transformer or antenna, including:

- a first part (1) made of magnetic material forming a first base (9) and at least an arm (8b) projecting above said first base;

- a second part (13) made of magnetic material forming at least a second base and being secured to the free end of said arm of said first part so as to define

15 therewith a core or a magnetic circuit,

- a plate (4) inserted between said first and second bases and having an opening for the passage of said arm, this plate (4) carrying at least one electrically conductive winding (12) which surrounds said arm (8b), this winding ending by at least two electric contact plates (7a, 7b) located outside the projection of said first and
20 second bases in the general plane of said plate, characterised in that said at least two electric contact pads are located on at least one tongue (16, 18) formed of at least one layer or sheet of said plate, the end of said at least one tongue being folded and secured onto an external surface of said first or second base such that said electric contact pads are turned outwards.

25 9. Component according to claim 8, characterised in that said first and second parts (1, 13) made of magnetic material together form a closed magnetic circuit with three arms (8a, 8b, 8c) connecting said first and second bases, said winding surrounding the central arm (8b).

30 10. Component according to claim 9, characterised in that the plate (4) includes two tongues (16, 18) each having at least one electric contact pad, these tongues being folded and secured onto the same external surface of said magnetic circuit.

35 11. Antenna (22) formed of a core of magnetic material and a winding (12) of conductive material, characterised in that said core is formed of a first part, defining a first base (24) and an arm (26) projecting from this first base, and a second part defining a second base (30) and assembled to said first part at the free end of said arm, said winding being supported by a plate (28) having in the central region of the

winding an opening (6) in which said arm is inserted, said first and second bases extending into first and second substantially parallel planes which are substantially perpendicular to the direction of said arm.

5 12. Antenna according to claim 11, characterised in that said plate has a general plane which is substantially parallel to said first and second planes.

 13. Antenna according to claim 11 or 12, characterised in that said arm (26) is located substantially at a first end of said first base and at a second end of said second base, these first and second bases extending respectively from these first and second ends along opposite general directions.

10 14. Antenna according to claim 13, characterised in that said first and second bases each have the general shape of a V with two branches connected by a connecting part, said arm connecting the two bases at respective connecting parts so that these two bases have, in projection onto said first or second plane, the general shape of an X.

15 15. Antenna according to claim 14, characterised in that projecting parts (34, 35) in the direction respectively of said second plane and said first plane are provided at the free ends of said branches of the first base and of the second base.